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The Rise of Alternative Early Stage Financing Methods

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Introduction

The vast majority of financial literature says that if a company can't secure debt, they need to raise equity. This has been the case throughout history as startups have had been unable to obtain debt, and have therefore defaulted to raising equity. Prior to the 1940's someone with an idea or a new technology had really no institution to turn to in order to raise capital. Traditional bankers have had to abide by usury laws that limited the interest banks can charge on loans, restricting the ability to justify the risks inherent in start-ups.[1] Therefore, as startups in the early stages [2] were deemed too risky and had too few hard assets for bank loans, equity based venture capital was born and has developed into the most important driver for early stage startup growth over the past 75 years. A 2015 study conducted at the Stanford Graduate School of Business found that 43% of U.S. public companies founded since 1979 were funded by venture capital. These companies now comprise 38% of all employees, 57% of the total U.S. market capitalization, and account for 82% of all R&D spend. [3] These statistics have only grown in value as of May 2021.

Today, alternative options for startups have emerged as it has been found that equity is not always the most lucrative option for founders and investors, even in the early stages. There has been an explosion in seed and pre-seed financings for early stage startups over the past decade and much of these financings have been channeled via new early stage investment instruments. Convertible instruments including convertible notes, SAFE notes, and KISS notes have grown in popularity over the past seven years and now are becoming commonplace in the seed and pre-seed rounds of startup financing. In fact, by 2018 convertible instruments were estimated to have been used in roughly half of all seed stage transactions.[4]

As the early stage private capital markets have experienced innovation over the past decade, a more recent trend has emerged in the growth stage capital markets which can be classified as non-dilutive growth capital. There are a number of different non-dilutive, growth stage investment instruments, but this paper will touch on venture debt, revenue based financing options, and recurring revenue as an asset class. The reason this is relevant in understanding alternative early stage financing methods is that non-dilutive growth capital ultimately has a trickledown effect on founders and early stage investors.

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[1] Zider, "How Venture Capital Works"
[2] "Early stages" for the purpose of this paper will be classified as the pre-seed and seed stage.
[3] "The Economic Impact of Venture Capital: Evidence from Public Companies | Stanford Graduate School of Business."
[4] Coyle and Green, "The SAFE, the KISS, and the Note."

The forthcoming section of this paper will describe in detail the value of each financing instrument and highlight their shortcomings while also describing the natural evolution of the early stage financing environment. Following this background, the analysis section will further provide insight into the difference of traditional early stage investing tools and more modern, alternative methods using information from nearly 2000 real startups.

A Brief History of Early Stage Financing Instruments

Equity

Equity has traditionally been the main financing option for early stage startup firms. Historically, startups have not qualified for bank loans and thus have been forced to turn to funding from angel investors, venture capitalists, and now even crowdfunding platforms to raise capital. In general, equity financing is viewed as less risky than debt financing because the company is not required to pay back its shareholders, which can inhibit growth and take away from a business's bottom line. With equity, companies are able to reinvest the cash flow from their operations to grow their business rather than focusing on debt repayment and interest obligations. Prior to 2005, individuals, being angel investors, friends or family, who invested in early-stage startup firms would typically invest alongside the founder of the new venture by purchasing shares of common stock. The primary feature of common stock is its simplicity, however it is subordinated to all other classes of securities and creditors if and when liquidation occurs.[5] Where individuals generally purchase common stock, venture capital (VC) funds, which invest more substantial amounts of capital at later stages in a company's development, would typically receive convertible preferred stock. This convertible preferred stock offered more legal and economic protections including entitlement to a preferred dividend and liquidation preferences, essentially giving them priority over the common stock holders. This equity capital structure makes logical sense as institutional venture capital firms are known to add value with access to networks, capital, additional resources, and also provide external validation and positive signaling to other potential investors.

Where equity investment falls short is the fact that it is among the most expensive forms of capital. Owners are required to give up a portion of their ownership and dilute their control while also not taking advantage of the tax shield granted to debt instruments. Selling an early equity stake for a few hundred thousand dollars

[5] Coyle and Green, "Contractual Innovation in Venture Capital."

can cost a company millions if not billions when it exits[6]. Additionally, compared to debt, equity investments offer no tax shield as they provide no tax-deductible expenses. A characteristic common among both equity and debt capital raises for early stage startups is that there is a level of level of friction caused by the amount of time and resources it takes to close a respective round. A typical seed round can take upwards of six months to close and the terms and negotiations that come after convincing investors of the validity of the idea further complicates the process. This friction derived from length of time and complexity of terms is also further amplified by the cost of legal fees associated with the stock issuance of an equity based round. For a small "venture-style" series A round of $100,000, legal fees can end up being somewhere in the $20,000-$35,000 range.[7] This is a tremendous financial burden for founders especially when the amount of capital being invested into the business is relatively small. Ultimately, these drawbacks of equity instruments have increased investor and founder appetite for alternative financing instruments within early stage startups capital raises. While equity is a claim of the future value of the company, venture debt has grown in popularity as simply a claim on the future cash flows of the company, until the debt is paid off.

Venture Debt

Although equity has remained the popular financing instrument for early stage startups, debt instruments have had a unique place in the capital markets for financing small businesses that generate sufficient cash flow to service the debt and who can provide tangible assets as collateral. There are instances where debt financing can deliver adequately attractive risk-adjusted return to the lenders. These lenders historically have been , community banks, the Small Business Administration, or high-net-worth individuals. An early example of attractive debt opportunities were trade-related venture assets such as ships, mills, and resource-processing equipment which provided collateral and a positive expected cash flow over a reasonable time horizon. These specific business characteristics attracted the interest of creditors looking for high-yield, risky investments. In the 1970s, venture debt rose to prominence with equipment breakthroughs in the semiconductor, communications, computer hardware, and military technology industries.[8] Like the trade related assets of the past, semiconductor and computer hardware businesses held physical assets that could be used as collateral for creditors and were able to generate positive cash flow in the short term. Today, as many technology startup

[6] An exit can be defined as a liquidity event such as merger, acquisition, or as a public market ownership transfer through IPO, SPAC, or Direct listing.
[7] Coyle and Green, "Contractual Innovation in Venture Capital."
[8] Davis, Morse, and Wang, "The Leveraging of Silicon Valley."

firms lack tangible collateral and positive short term cash flow, Venture Debt is mainly used in one of two financing scenarios: 1) as a Bridge loan to extend runway and 2) as levered equity, meaning in conjunction with equity rounds. Although still used within startup firms, venture debt is generally used in the growth and later stages of a company's life cycle. In fact, a startup will almost always have VC backing before raising venture debt. It is most frequently used when a startup needs capital to reach their next key milestones before a subsequent funding round. It is also used when a round is already filled, but a founder may want to further increase the round amount without further dilution. Venture Debt is never used in the seed or seed stage rounds, however it is important in understanding the next innovation in early stage financing instruments. Some will formally classify these to be discussed instruments as "seed stage venture debt", however for the purpose of this paper we will classify venture debt and convertible debt as two separate entities. In order to understand convertible debt as a broad classification one must be aware of the various iterations of the instrument.

Early Stage Convertible Debt

Convertible debt, at the most basic level is debt that can be converted to equity when certain conditions are met, like a specific valuation or date. Pitchbook includes SAFE and KISS notes within their Convertible debt category as found in a number of financing status notes on the platform. Due to this labeling on Pitchbook, this paper will use the classification of "Convertible debt " as an umbrella term that includes convertible notes, SAFE notes, and KISS notes. Although SAFE and KISS notes lack the hallmarks of any traditional debt instruments ie: interest provisions and maturity dates, they technically do not fit either a debt or equity classification. A perhaps better classification for the umbrella term connecting these three instruments would be "convertible securities" or "convertible instruments", however in order to be consistent with the Pitchbook data we will be referring to the group as seed stage convertible debt instruments.

Convertible Notes:

A convertible note, has characteristics of both debt and equity, but is formally classified as a debt instrument that may be converted into equity at a later date. Similar to venture debt, convertible notes pay interest, have a maturity date, and take priority over equity holders. Unlike venture debt, convertible notes offer the note holder a chance to convert the debt to equity—giving the holder a chance to participate in the upside if a company raises another round or achieves a successful exit. Although legally a debt instrument, a convertible note is used effectively as an equity instrument seeing as most founders to do not actually make debt

payments and the investors are typically interested in the potentially larger upside.[9] Historically the primary purpose of a convertible note in venture finance was as a bridge loan, however as the cost of launching a startup plummeted in the 2000s and as the number of software companies grew, the convertible debt contractual infrastructure began to evolve.[10] Investors in these new ventures began to structure convertible notes to provide financing to early stage technology startups. For the sake of clarity, we will refer to the use of convertible notes as a first round of financing as "seed notes".

Seed notes have grown significantly in use since the mid 2000's as there has been a dual opt in among startup founders and investors alike. The attractiveness of seed notes to founders is predicated on the following: 1) Substantially lower legal fees 2) flexibility to put off valuation and dilution to a later date and 3) reduction on the time spent to close a round.[11] In regards to the investors perspective, seed notes offer all the benefits that they offer the founders and is a unique instrument that provides comprehensive downside protections while also offering tremendous upside potential.

As a consequence of the surge in popularity of the seed note, several undesirable features of the original seed note structure became apparent. For one, some individuals who invested in companies that subsequently achieved enormous valuations have come to regret their initial decision to structure the investment in the form of a seed note rather than equity. This is because increasing firm valuation dilutes the ownership percentage by note holders following the occurrence of a series A round and often times will result in ownership that does not fully account for the risk associated with being an investor in the earlier round. The impact can be seen in the following example:

Seed Note Terms:	**Series A Terms (12 Months later):**
Total Raise: $1M	Total Raise: $9M
Maturity: 3 Years	Equity Offering: 30%
Interest rate: 8%	Post-money Valuation: $30M
Conversion Discount: 20%	Pre-money Valuation: $21M
Shares Outstanding (at the time of seed note): 8M	

Calculations:

[9] Becker, "Convertible Notes: A Form of Early-Stage Financing."
[10] Coyle and Green, "Contractual Innovation in Venture Capital."
[11] Becker, "Convertible Notes: A Form of Early-Stage Financing."

1. Consider interest accrual: $1M * 1.08 = $1.08M value at series A (1 year later)
2. Find Seed Note Pre-money valuation by discounting the series A pre-money valuation and subtracting note value at series A: $21 * (1-.20) = $16.8M -$1.08M = $15.72M
3. Calculate Seed Note cost per share: $15.72M / 8M = **$1.97**
4. Calculate Seed Note Ownership: $1.08M/1.965 = 549.6K shares or 6.48% of 8.5496M shares
5. Calculate Series A investor's Cost per Share: $21M/8.5496M = **$2.46**
6. Calculate Total Shares Outstanding at Series A: $9M/2.46 = 3.66M + 8.5486M = 12.207M
7. Calculate Ownership of Seed Note Holders at Series A: 549.6K/12.207M = 4.50%
8. Calculate Value of Seed Note Ownership At Series A: 4.50% * $30M = $1.35M

Figure 1, Seed Note Calculations

In this example, although a seed note investor took on a large value of added risk by investing in the seed round versus the series A round, the seed note investor is only compensated with a 20% discount on the series A investor's cost basis. A typical seed round will result in a 10% - 25% ownership transfer from founders to seed stage investors. In this case seed note investors maintained only 6.48% ownership. This is a value that is not satisfactory for any seed round, as it will only continue to get diluted over the course of future funding rounds. Although the discount rate provides some compensation to seed note investors, it is a value that gets negotiated regularly and one that is directly tied to the success of the subsequent funding round.

In response to this problem, a contractual innovation known as the conversion price cap came to exist. This cap allows investors to guarantee a conversion at a lesser or equal valuation to the price cap, essentially acting as a price ceiling for investors. This enables seed note investors to receive a greater number of shares upon conversion compared to the higher valuation. It empowers seed note investors to not necessarily just rely on the success of a subsequent round. This mechanism ensures a return value that more accurately justifies the early stage risk seed note holders carry. The valuation price cap has since became a standard feature of most convertible notes by 2007 or 2008. Today nearly every seed note investor uses a valuation price cap. The example below illustrates why:

Seed Note Terms:	**Series A Terms (12 Months later):**
Total Raise: $1M	Total Raise: $9M
Maturity: 3 Years	Equity Offering: 30%
Interest rate: 8%	Post-money Valuation: $30M

Conversion Discount: 20% Valuation Cap: $5M Shares Outstanding (at the time of seed note): 8M	Pre-money Valuation: $21M

Calculations:

1. Consider interest accrual: $1M * 1.08 = $1.08M value at series A (1 year later)
2. Find Seed Note Pre-money valuation by discounting the series A pre-money valuation and subtracting note value at series A: $21 * (1-.20) = $16.8M -$1.08M = $15.72M
3. Calculate Seed Note cost per share: $5M / 8M = **$0.625**
4. Calculate Seed Note Ownership: $1.08M/0.625 = $1.728M shares or 17.76% of 9.728M shares
5. Calculate Series A investor's Cost per Share: $21M/ 9.728 = **$2.158M**
6. Calculate Total Shares Outstanding at Series A: $9M/2.158M = 4.17 + 9.728 = 13.899M
7. Calculate Ownership of Seed Note Holders at Series A: 1.73M/13.899M = 12.45%
8. Calculate Value of Seed Note Ownership At Series A: 12.45% * $30M = $3.73M

Figure 2, Seed Note Calculations with price Cap

In this example a $5M valuation cap acts as the valuation ceiling that a seed note investor is willing to convert their note at. Seeing as it is at a lower value than the seed note pre-money valuation of $15.72M it will be chosen by the seed note investor to convert at. This conversion ultimately increases the total ownership of seed note holders by greater than 2.75x at the series A round and allows the seed note holder to receive a share price significantly lower than without the valuation cap. This lower price more accurately aligns the risk and reward scenarios for seed note investors as it nets seed note investors 17.76% ownership initially, which is in line with the 10%-25% seed round benchmark.

Unlike the valuation cap which was an innovation that became standardized among seed notes, there are a number of other undesirable seed note features that have spurred further external innovation. For example: Seed notes accrue interest which eventually gets tacked onto the principal when converted into equity. Many founders feel that this is an unnecessary giveaway to investors and an unnecessary distraction and complication at the time of conversion. [12] An additional debt feature that has caused tension among founders

[12] Coyle and Green, "The SAFE, the KISS, and the Note."

is the fact that there remains a maturity date upon which investors could ask the company to repay the principal. Although this rarely happens in practice, it does give investors leverage to extract favorable concessions from a given startup. [13] In response to these perceived problems with the traditional seed note, a derivative of this instrument was developed called The Simple Agreement for Future Equity or SAFE.

SAFE

The SAFE was developed by Carolynn Levy, an attorney and partner at Y-Combinator (YC), the premier startup accelerator that has helped launch companies such as Stripe, Airbnb, Doordash, Coinbase, and Instacart among others.[14] The SAFE was first released in 2013 and resembled the classic seed note in many regards, but included are a few distinct features that help solve the aforementioned problems. Unlike the seed note, the SAFE does not accrue interest and lacks a maturity date. The SAFE note intentionally excludes the debt specific features to create a more founder friendly equity derivative contract.

Originally, Y-Combinator saw the SAFE as a way to raise small amounts of capital early enough in a startups life cycle. Since 2013 it has since not only became a replacement for a convertible note bridge rounds, but has even become an alternative to raising large amounts for priced seed rounds. Today the standard use case of a SAFE note is as a replacement for an entire priced pre-seed or seed round. Within a year of the SAFE being founded 500 Startups, another Silicon Valley based accelerator that has helped launch companies such as Canva, GitLab, and Udemy, among others, developed their own seed note derivative called the Keep It Simple Security or KISS note.

KISS

In 2014, 500 Startups released the KISS with the goal to address the perceived problems with the convertible note in a manner that struck a different balance between the interest of investors and founders than the one set forth in the SAFE and other various seed note iterations. Based on the venture financing environment at the time, 500 Startups felt smaller angel investors may be the ones under pressure to accept unbalanced terms.[15] There are two variety of KISS contracts, a debt version that is a convertible note with standardized terms such as a 5% interest rate and 18 month maturity date and an equity version that closely resembles that

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[13] Coyle and Green, "The SAFE, the KISS, and the Note."
[14] "Startup Documents | Y Combinator."
[15] Raiten, "500 Startups Announces 'KISS"

of a SAFE with a main difference being a KISS converts for any priced round greater or equal to $1 Million. For context a SAFE converts at the next equity round regardless of the amount. As the equity KISS and SAFE are nearly identical, I will be referring to KISS and SAFE contracts in tandem throughout the rest of this paper and KISS note specific references will be assumed to be the equity KISS unless said otherwise.

SAFE and KISS

There are four scenarios that may occur for an investor after a SAFE or KISS investment is made: 1) a post-conversion liquidity event 2) a pre-conversion liquidity event 3) a dissolution event or 4) no future financing/ liquidity event. [16] A post conversion liquidity event occurs when a SAFE or KISS has converted at an earlier round and then the company is acquired or goes public. At this point an investor has converted their notes to equity and receive their portion of the liquidation proceeds at exit. A pre-conversion liquidity event occurs when the company is acquired or (unlikely) goes public before the next round of financing so no conversion takes place. In this situation a SAFE or KISS holder elects to either convert to equity and receive proceeds from the liquidity event based on pro rata[17] ownership or receive a cash payout of their original investment plus some pre negotiated return. In a dissolution event, the company shuts down and liquidates prior to raising a subsequent round of capital. The SAFE holders would receive any residual assets up to the amount of their original investments. The final scenario is one not discussed often, however is one that is important consider. If a company never raises additional equity capital and never sells itself or goes public, then a SAFE ultimately will never convert and be rendered worthless. This is a rare scenario for venture backed startups, however as crowdfunding platforms gain traction allowing more individuals to invest in tech startups and non-tech startups, this becomes more of a potential concern. SAFE and KISS contracts are both worthless if there is no future financing round or liquidity event. Therefore, only companies that are strong candidates for future VC investment should raise with a SAFE or KISS.

Current Venture Financing Environment

Despite this innovation and competition among seed stage financing instruments, priced equity rounds still play an important role in the early stage ecosystem. According to a survey conducted by John F. Coyle and Joseph M. Green an estimated 50% of seed stage transactions continue to be priced equity rounds whereas

[16] Green and Coyle, "Crowdfunding and the Not-So-Safe SAFE."
[17] Pro Rata can be defined as the rights given to an investor in a company that allows them to participate in a subsequent round of funding in order to maintain their level of ownership.

convertible notes sit at roughly 36% of transactions and the remaining 14% can be attributed to SAFE and KISS notes. [18] A part of this continued reliance of price equity rounds can be explained by innovations within equity financing contracts themselves such as the "Light preferred" also known as Series Seed financing documents which have dramatically reduced the legal fees associated with priced equity rounds and have shortened the time and complexity surrounding equity raises.[19]

The private capital markets have grown tremendously over the past decade. Although seed stage equity transactions have lost market share to seed stage convertible debt, it has still managed to grow in value of transactions and in volume of deals. As an overview, there were roughly 5,500 total VC deals in 2010 completed according to Pitchbook. In 2020, that number has more than doubled (2.22x) to 12,250 completed VC deals.[20] As this growth has been impressive, venture debt as a financing method has outpaced the greater VC market. In the same time period venture debt has tripled (3.09x) growing from 940 deals in 2010 to 2,900 deals in 2020. It also reached a record value of $28.2 billion in 2019 and nearly matched that in 2020 despite the fundraising challenges that came with COVID-19. This growth trend for venture debt makes logical sense, seeing as the more companies that receive institutional venture backing the more potential borrowers for venture debt lenders there are. Only 800 of the 12,250 venture debt deals in 2020 were classified as early stage deals (series A and series B), but loan value for early-stage venture debt has increased from an average yearly value of $1.4 billion from 2006 through 2013 to an all-time high value of $11.5 billion in 2019. [21]

According to Pitchbook data there were over 1074 convertible debt deals in 2020 accounting for roughly $1.4 billion in total deal values. This number can be compared to 86 convertible debt deals in 2010 (12.49x) with a total deal value of $80 million (17.5x). Seed notes have grown orders of magnitude faster compared to the broader traditional early stage equity markets and the venture debt markets. As a matter of fact, in 2020 there were nearly the same number of late stage traditional venture debt financings (1084) as there were convertible debt financings (1075). To further provide an overview of the breakdown of convertible debt financings, a study completed in 2018, found that from October 14th, 2014- July 24th 2018 there were 248 Form D filings

[18] Coyle and Green, "The SAFE, the KISS, and the Note."
[19] Coyle and Green, "The SAFE, the KISS, and the Note."
[20] Stanford, "Venture Debt a Maturing Market in VC."
[21] Stanford, "Venture Debt a Maturing Market in VC."

that listed SAFEs as the type of security sold, 12 Form D filings that listed KISS notes, and more than 1,500 filings related to convertible note offerings over a similar period.[22] Although this paper makes a distinction between venture debt and convertible debt as mentioned earlier, the graphs below depict the growth of both venture debt and seed stage convertible debt deals jointly according to a Pitchbook Q1 2021 data set.

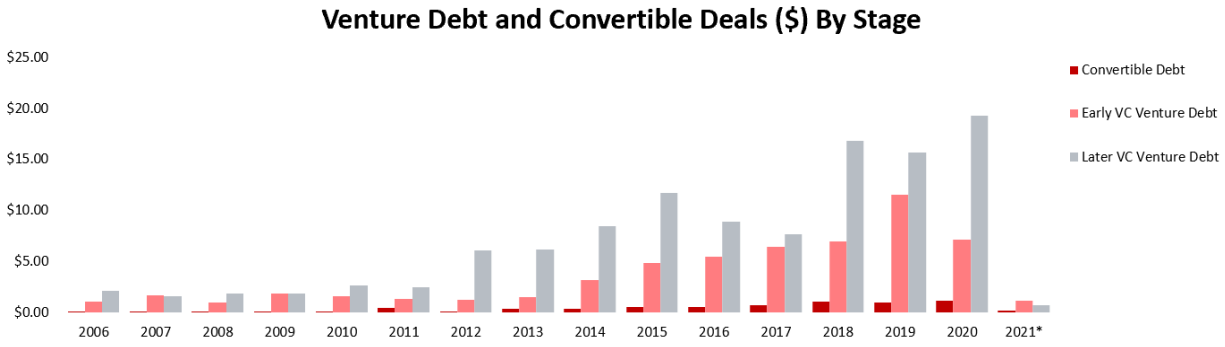

Figure 3, Venture Debt Deals ($ value by stage)

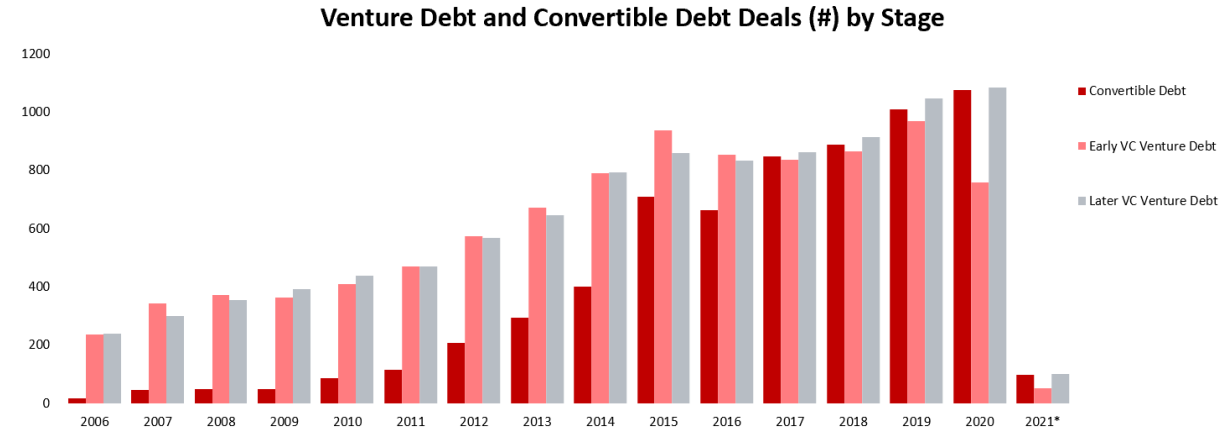

Figure 4, Number of Venture Debt Deals by Stage

As the private capital markets have continued to grow over the past 10 years, alternative players have come to the table to distribute funds to startups. Prior to 2016, angel investors and institutional venture capital firms were really the only two ways to raise early stage startup funding. This landscape has grown now to include a new type of "player" by the name of crowdfunding platforms. This type of capital raising mechanism would not have been included in the same sentence as angel investors and VCs prior to 2016 because it frankly did not exist. There have been angel syndicate platforms such as AngelList which began in 2010, however for the last 80 years, private companies were legally required to only raise capital from accredited investors, the

[22] Coyle and Green, "The SAFE, the KISS, and the Note."

wealthiest 2% of Americans. Regulation CF also known as Title III of the JOBS Act went into effect in May of 2016 and allowed private companies to raise up to $1.07 million from all Americans. As of March 15th, 2021, The Security Exchange Commission (SEC) has updated the JOBS act, particularly Regulation CF, to increase the maximum allowable fundraising amount per 12 months to $5.0 million, nearly 5x it's 2016 value. [23] Through October 2020, more than $150 million has been raised through equity crowdfunding, a value more than double the amount raised in 2018 according to Pitchbook. [24]

New players in the capital markets have started off using new financing instruments. Crowdfunding platforms like WeFunder and Republic have used SAFE and convertible notes to finance their startup offerings. Of the 96 issuers to launch crowdfunding offerings through August 31, 2016, 30 issuers (approximately 31%) chose to offer convertible securities (such as convertible notes, SAFEs, or similar instruments) to prospective crowdfunding investors.[25] This 31% of convertible securities can be broken down further as 90% of the convertible securities used were SAFEs. This percentage of SAFE usage is higher than the VC and Angel broader market which was found to be just roughly 14% in the survey. [26] Convertible debt as a general, all-encompassing entity (Safe + KISS + Seed Note) was found to be used at a lower level than that of the broader angel and VC market (31% vs. 50%). Additionally, crowdfunding raises via equity were more likely to occur (69%) than in the broader Angel and VC capital markets (50%).

This discrepancy is likely because of the scenario 4, that was discussed earlier on page 9 of this paper. A scenario with no future financing or liquidity event is a more common occurrence among startups that raise capital via crowdfunding platforms. This is in part due to the fact that many of these companies have struggled to raise traditional venture capital funding and turn to crowdfunding as a secondary option of financing. Additionally, many businesses who simply need to raise one lump sum of funding with no plans of raising additional capital are participants on crowdfunding platforms. Some argue that there is a material difference between the type of businesses that engage in fundraising via crowdfunding versus those which raise traditional VC rounds, however there are situations where crowdfunding can provide inherent value to a startup. A great example is a direct to consumer brand who is looking to engage early customers, and what better way to do that than by making them investors. Although this may be the case in some instances, the

[23] "SEC.Gov | Regulation Crowdfunding."
[24] Stanford, "Whats Next for Equity Crowdfunding."
[25] Green and Coyle, "Crowdfunding and the Not-So-Safe SAFE."
[26] Coyle and Green, "The SAFE, the KISS, and the Note."

data indicates that crowdfunding platforms favor equity financing rounds for seed stage funding versus convertible debt. This suggests that crowdfunding platforms themselves realize that a startup who may raise a crowdfunding round may not go on to raise a follow on round of venture financing and therefore favor a financing instrument that does not penalize investors for this.

Other Innovation in Early Stage Financing Methods

Defi

Over the past decade a number of further financing innovations in the early stage venture world have appeared that I would be remiss without mentioning. The first noteworthy innovation this section will highlight is decentralized financing or DeFi. DeFi, at its most broad level, is a concept where financial products are available on a public decentralized blockchain[27] network making them open to anyone to use, generally circumventing any need for an intermediary like a bank or brokerage. DeFi aims to make the fundraising environment more decentralized, innovative, interoperable, borderless, and transparent. Blockchain technology has allowed for a number of innovative fundraising methods to gain traction in recent years. Decentralized fundraising's main value add compared to traditional VC or angel investing is it opens rounds to global investors, creates network effects, reduce friction in the fundraising process, and ease access to capital.[28] These intentions are similar to that of the goals of crowdfunding platforms—decentralizing access to startup investing.

The Initial Coin Offering or ICO is an example of a blockchain based decentralized funding mechanism that gained tremendous popularity in 2017. At its core an ICO is a public issuance of a startup's "tokens" that ultimately get exchanged for other crypto currency such as Bitcoin or Ethereum. ICOs were a powerful tool for creating decentralized communities, kickstarting network effects, incentivizing participants, providing faster liquidity to investors, and forming capital for creators.[29] In 2017, ICOs allowed startups around the world to raise more than $5.3 billion and within 2018 ICOs hit their peaks after raising more than $7.8 billion in the year.[30] This is greater than 50x than the total value raised among crowdfunding platforms as of October 2020, to put in context the scale and volume of these offerings. Initially, the main purpose of an

[27] Blockchain is a technology that can be understood as a digital ledger of transactions that is duplicated and distributed across an entire network of computer systems also on the blockchain
[28] Chen and Bellavitis, "Blockchain Disruption and Decentralized Finance."
[29] Batiz-Benet, Santori, and Clayburgh, "The SAFT Project: Toward a Compliant Token Sale Framework."
[30] Adhami, Giudici, and Martinazzi, "Why Do Businesses Go Crypto?"

ICO was to mirror that of an initial public offering (IPO) without the need for stock exchanges and bank intermediaries, however it quickly expanded to the early stage markets. Many ICO token sales ultimately happened long before a token network had genuine functionality, more specifically before a company had a product, customers, or any real, tangible invention. Essentially, companies were conducting pre-seed and seed stage ICOs. These were eventually called "direct token pre-sales" and were sold at a greater discount to investors and early potential users in order to compensate them for the greater risk profile of the associate token. The purpose of these direct token pre-sales were to finance the development of the token network and the company's launch.[31] This, ultimately operated as an alternative to a traditional angel or even VC pre-seed or seed stage financing round.

Based on an analysis done on a set of 2018 ICOs, it was found that that more than 70% of all issued tokens have lost all their value and just 8% of tokens issued during their ICO traded above their ICO price after six months.[32] Below is a graph depicting the volume of ICOs during the1 2018-2019 time frame—just after the peak number of projects in 2017-2018.

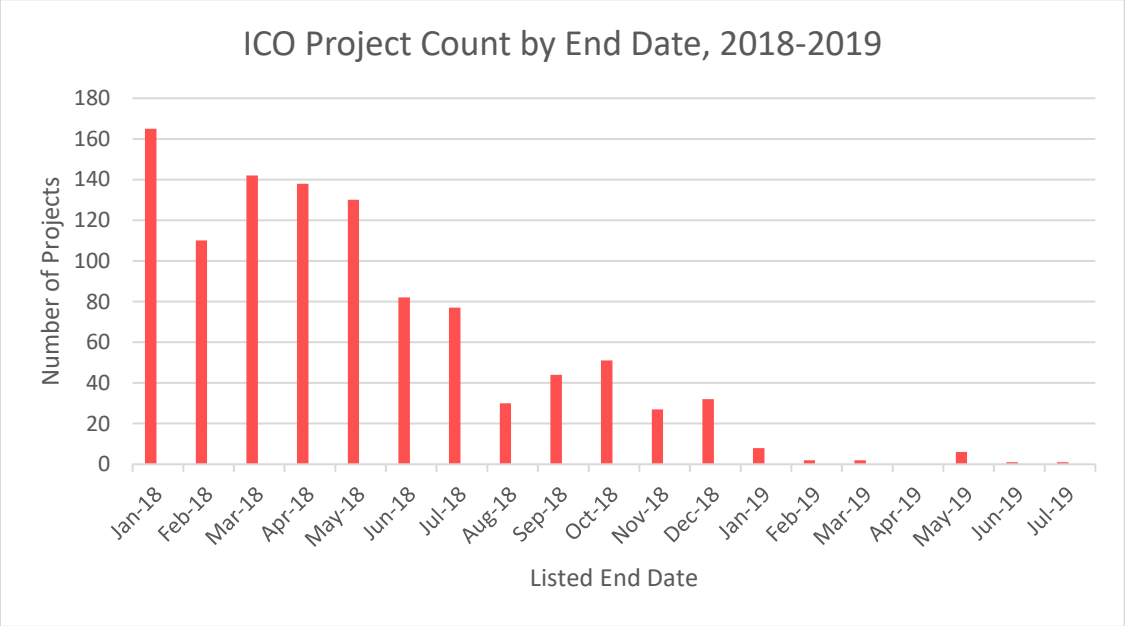

Figure 5, Number of ICO projects by Month[33]

[31] Batiz-Benet, Santori, and Clayburgh, "The SAFT Project: Toward a Compliant Token Sale Framework."
[32] Fromberger and Haffke, "ICO Market Report 2018/2019 – Performance Analysis of 2018's Initial Coin Offerings."
[33] Takahashi, "Prescriptive Jurisdiction in Securities Regulations."

Needless to say, by the following year the ICO market was not the same. In 2019, ICO funding fell more than 95% to just $371 million. The fall is attributed lack of regulation, lack of security, rise in the volume and value of fraud, and a general lack of demand. The ascent and demise of the ICO did attract enough attention to further open the token based financing landscape up to a number of new innovations. This paper will briefly reference The Security Token Offering (STO) and the Initial Exchange Offering (IEO) as they are relevant in understanding the current Defi landscape, however they are not particularly focused on the early stages and are therefore not directly related to this papers purpose. The STO and IEO are two separate ICO like instruments that have iterated on the disadvantages of the ICO. The STO differs from an ICO in the fact that it is asset backed and complies with regulatory governance. An IEO differs from the typical ICO in that the tokens are issued on an exchange rather than to the investors directly, a more direct resemblance of that of a traditional IPO. This allows reputable exchanges to endorse high quality projects and more finely filter out potential fraud.

Revenue Based Financing

An additional source of venture financing for startups is that of revenue based financing. Although, not an early stage financing instrument it is important to understand before foraying into the final innovation in venture financing discussed in this writing. Revenue based financing (RBF) is a essentially a loan for businesses considered "risky" in which repayments are based on a percentage of the borrower's monthly revenue rather than a fixed amount. RBF can be classified as a form of venture debt that allows businesses to access capital today based on their future expected revenues, however repayments are tied to revenue and therefore grow as a company's revenues grow. This contrasts typical venture debt which is generally is supported by a fixed repayment rate. RBF originated in the oil, gas and mineral industries as a source of debt financing and has since expanded into the life sciences, movie, and energy industries. [34] In recent years, it has expanded into technology as well as non-technology sectors as a non-dilutive way for growth stage startups to raise capital

Revenue based financing often works well with businesses that have the following: 1) high margins 2) small capital needs 3) profitability or near profitability 4) founders that want to retain their equity 5) no need to raise additional funding in the mid and often even the long term. Although there are many benefits that

[34] "Revenue-Based Financing | Find Venture Debt."

come with non-dilutive funding in the growth stages, only a very specific type of businesses checks off the boxes needed to raise revenue based investment. Clearbanc is an example of a company that provides growth capital to e-commerce and B2B companies to grow. The company identifies high-growth funding opportunities and offers funding in exchange for a steady revenue share of earnings until it's paid back plus a certain percent fee, enabling startups to avail an alternative source of funding for their fast-growing businesses without diluting equity. There is no all encompassing data on revenue based financing transactions as a whole, however Clearbanc, recently rebranded as Clearco, has invested greater than $1.6B in companies.[35]

Revenue Securitization

The final innovation in venture financing that will be discussed in this writing is one that builds on the idea behind revenue based financing, but is not innovation focused on platform like ICOs or even crowdfunding. It is instead an innovation of an entirely new asset class.

In the current market environment with zero and negative yield rates, investors have set out to find alternative sources to generate yield. Recurring revenue, which is found in a number of different kinds of businesses, but most notably software as a service (SaaS) companies, has transformed from just the expected periodic sales of a business into a full blown, securitizable, asset class. Recurring revenue is generally predictable, stable, and can be counted at regular intervals with a fairly high degree of certainty. Additionally, when compared to various levels of debt in the capital stack, the contracts with software providers even take priority over first lien debt.[36] For the foreseeable future these contracts also maintain a return profile greater than that of traditional fixed income. These characteristics paired with the explosive growth of SaaS business have created an opportunity for the securitization of recurring revenue contracts.

Pipe, a Miami based startup most recently valued at $2 billion[37], has created a marketplace that connects companies with monthly or quarterly recurring revenue with investors who bid to purchase these revenue contracts for their annual value. Common recurring revenue company types include SaaS, telecommunications, direct-to-consumer subscription products, and media companies. Pipe's investors make offers to buy these recurring subscriptions at a small discount to their annual value and maintain the spread from the discount paid to the actualized value of the annual contract. Many startups already do this by

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[35] Palihapitiya, "All-In Podcast, State of Venture Capital *E26*".
[36] John Street Capital, "Recurring Revenue: The Rise of An Asset Class."
[37] Azevedo, "Pipe, Which Aims to Be the 'Nasdaq for Revenue,' Raises More Money at a $2B Valuation | TechCrunch."

offering customers monthly recurring revenue (MRR) discounts for annual payments for service/products. After going through a number of popular SaaS products monthly pricing models, I found that depending on a company's need for cash, they can be discounting their MRR by up to 50%.[38] Contingent on the credit rating associated with the company getting Piped, a company can save a large double digit percentage of what they would have lost otherwise offering a discount on MRR to customers by listing on Pipe and leaving the discount to an open market of investors.

In addition to the core marketplace product, PIPE also has created The Recurring Revenue Offering (RRO) which allows the company to "pre-sell" future recurring revenue contracts that haven't been booked yet, whether they're paid monthly, quarterly, annually, or multi-year deals.[39] From the companies perspective, businesses 1) do not have to give large (20-50%) discounts to their clients to incentivize upfront payments 2) they are not further diluted as with equity investment 3) can continue to invest in growth without disrupting work flows 4) have access to one of the cheapest cost of capitals for private companies. Unlike revenue based financing options Pipe is not taking a percentage of revenue (which only grow as a company scales), it is generally less expensive, and it has the potential to be quicker and easier as all a company needs to do is list on the platform and let the open market take care of the rest. In terms of traction Pipe has connected greater than 3500 customers and over $1B ARR to investors willing to purchase revenue streams in just two years since founding and nine months since launch.[40] Below (Figure 6) is a chart depicting where PIPE fits in among other investment instruments.

[38] Quickbooks Online is currently offering 50% off MRR if just the first 3 months are paid in full at purchase, as of 5/5/2021 https://quickbooks.intuit.com/pricing/
[39] John Street Capital, "Recurring Revenue: The Rise of An Asset Class."
[40] Palihapitiya, "All-In Podcast, State of Venture Capital *E26*".

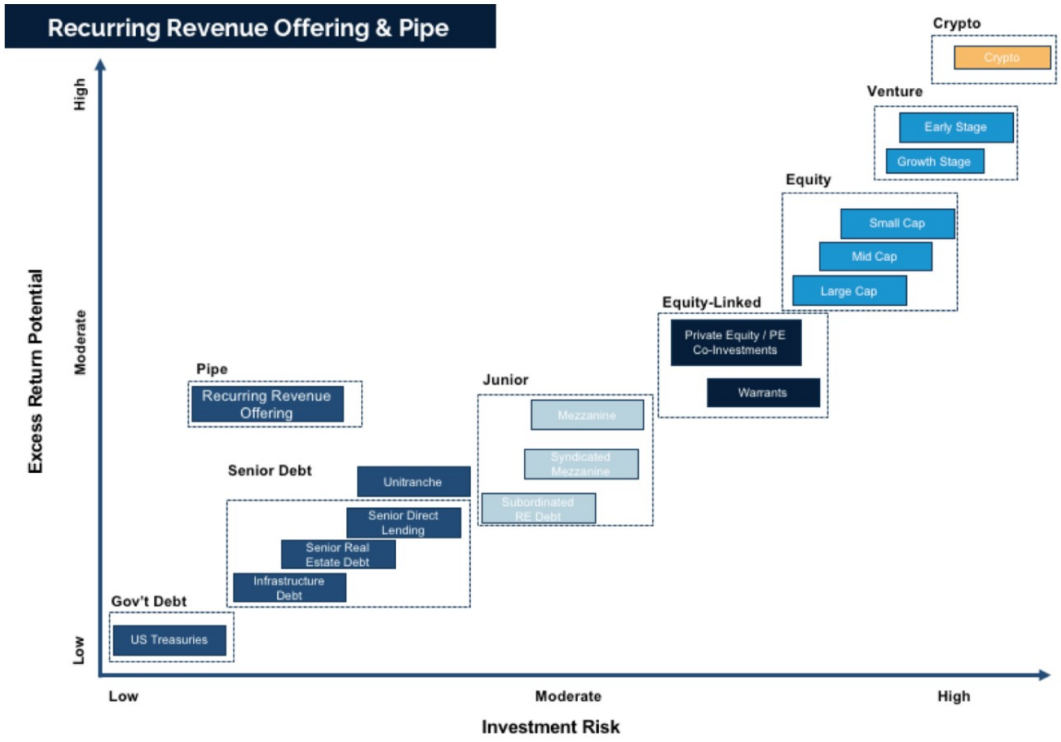

Figure 6, Pipe Offering in Relation to greater capital stack[41]

What do PIPE, RRO's, and revenue based financing instruments all have in common? They are all growth stage non-dilutive investment instruments. This relates to the early stage funding rounds in a much greater way than might be expected. As this paper focuses on the implications for early stage startups and early stage investors, these non-dilutive growth stage financing instruments have a trickle down effect on startups in the seed to series A rounds. This effect comes in the form of greater ownership for early stage investors and founders. This is true in two cases 1) when the founder is expecting to raise non-dilutive growth financing in the future so they keep a greater portion of early equity for themselves and give a greater share in the seed and pre-seed to early investors 2) the founder raises a seed to series A round and unexpectedly decides to raise capital using a non-dilutive growth stage instrument, saving early stage investors on expected dilution. Regardless of scenario, non-dilutive growth funding has the potential to favorably impact early stage investors and founders equity ownership in the form of greater allocations and less dilution.

[41] John Street Capital, "Recurring Revenue: The Rise of An Asset Class."

Analysis of Early Stage Financing Methods

Data Set Description

In addition to identifying alternative forms of financing methods for early stage startups, this paper will also analyze the implications of raising an initial funding round with convertible securities versus equity on startup outcomes. The equity baseline data set is comprised of 998 companies that were selected alphabetically in Pitchbook. The data set has been filtered by companies who have raised an equity seed round before 2017. Although there is access to startup data as recently as May of 2021, there needs to be at least 3 years from the first financing to be able to accurately determine outcomes seeing as the average time between funding rounds is roughly 12-18 months and in financial literature a company is often classified as inactive or failed if it has not had any funding activities for 3 years or more.

The second data set is a comprised of 990 companies that have raised seed stage convertible debt before 2017. This data set has been filtered by its first financing deal type (convertible debt) and by first financing deal date (before 2017). Within the convertible debt category on Pitchbook, it is unclear the percentage breakdown of SAFE, KISS, and convertible notes as individually they are not actively tracked categories by Pitchbook. Sporadically SAFE notes are mentioned in the financing status note, of some convertible debt transactions, however the majority whether SAFE not or not, do not actively report that information. This type of reporting within Pitchbook did not even become common practice for Y-Combinator until 2019. Y-Combinator listed SAFEs in the financing note as early as 2014, however that occurred only four times in 2014, zero times in 2015, twice in 2016, and wasn't adopted as common practice until 2019. 2022 likely will be the first year research will be able to pull a basically sufficient data set on SAFE specific transactions via Pitchbook.

Additionally, the starting data set for both equity and the convertible debt set were 1000 and 990 respectively, however of the 1000 only 956 had a disclosed date associated with their first financing round. Supplemented with Crunchbase data that, I was able to increase the working data set to 973 which is ultimately the total number of startup firms analyzed in the subsequent round analysis.

To compare the two data sets, it is important to first break them down by the date of the first financing round. This time based analysis can be broken down by date of first financing in the following ways: 1) by decade 2) by year. The equity seed data set has roughly 88% of its data from after 2010, 12% from between 2000-2010 and roughly 1% from before 2000. In comparison, 72% of the seed stage convertible debt data set

can be considered after 2010, 27% from between 2000 and 2010, and roughly 1% from before 2000. As the majority of the data set comes from the last decade, it can be broken down further as seen in the following tables:

Equity Baseline 2010-2017	# of financings	% of total
2016	96	9.6%
2015	137	13.7%
2014	162	16.2%
2013	175	17.5%
2012	132	13.2%
2011	90	9.0%
2010	56	5.6%

Figure 7, Equity Data Set Number of financings per year

Convertible Debt Financings 2010-2017	# of financings	% of total
2016	151	15.3%
2015	133	13.4%
2014	124	12.5%
2013	101	10.2%
2012	76	7.7%
2011	68	6.9%
2010	54	5.5%

Figure 8, Convertible Debt Data Set Number of Financings per Year

The discrepancy within decades and years correlate to the broader VC environment during these times. According to Pitchbook, the 2010's have been a record setting decade for capital raising and deal flow in VC. With roughly triple the amount of deal flow from 2010 to 2015, the larger percentage of convertible debt deals in the 2013-2016 range and equity deals in the 2012-2015 range make up roughly 51.4% and 62.3% respectively of the total data set.

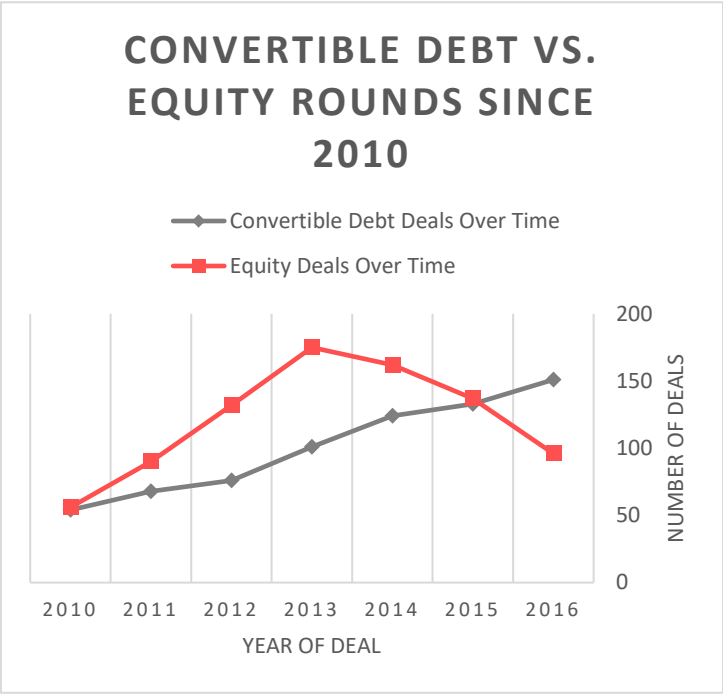

Figure 9, Convertible Debt vs. Equity Rounds From 2010-2016 (Datasets)

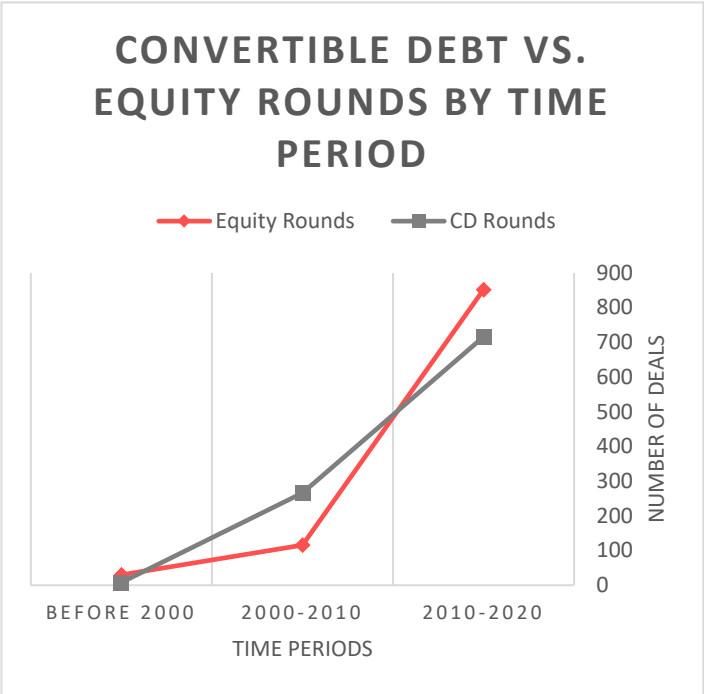

Figure 10, Convertible Debt vs. Equity Rounds By Decade (Datasets)

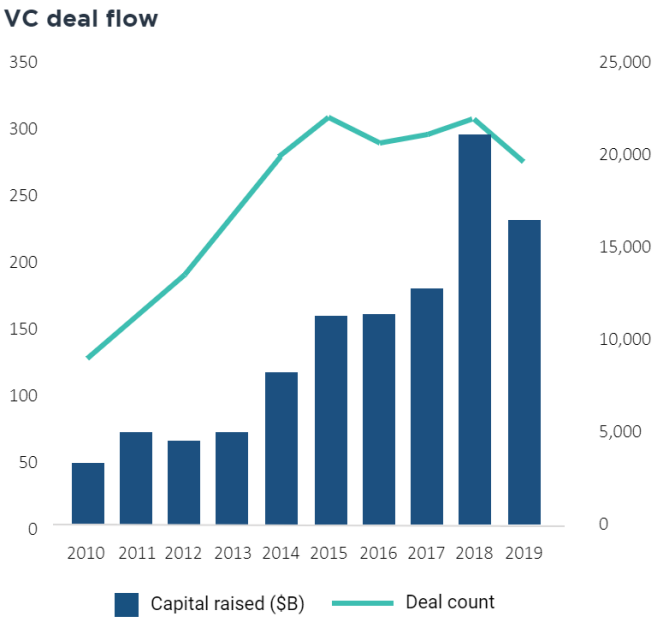

Figure 11, VC Deal Flow by Capital Raised and Number of Deals (Pitchbook Report)

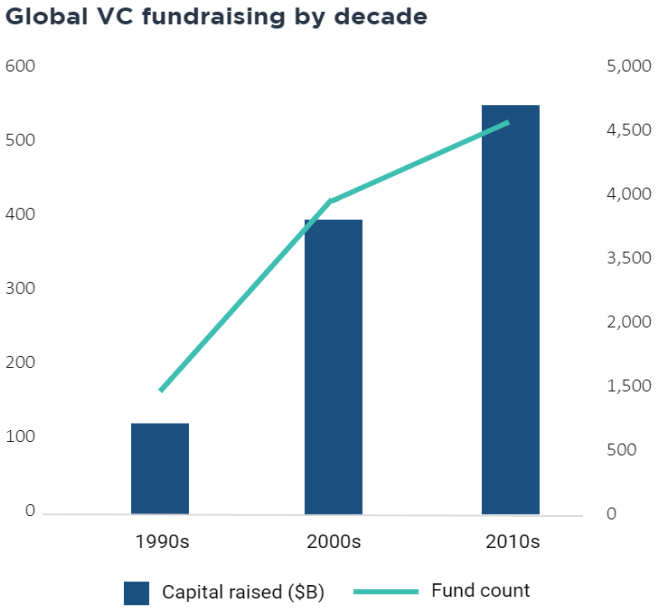

Figure 12, VC Deal Flow by Capital Raised and Number of Deals by Decade (Pitchbook Report)

Subsequent Round Analysis

The time period analysis by both decade and more specifically, most relevant decade, resulted in reasonably similar findings to each other and to that of the general VC market. Given that there were no major inconsistencies, the next step in this analysis is the subsequent round analysis. It is initially important to consider the likelihood that startups in these two group will raise a follow on round of funding after their initial equity or convertible debt rounds.

Based on my analysis a startup that has raised a first round of funding using solely equity has a 49% chance to raise additional funding in some capacity. This number does not necessarily correlate to a series A or even a traditional seed round (if starting with pre-seed). The explanation for this figure is that some follow on rounds may be secondaries, share repurchases, mergers of equals, corporate transactions, debt financings, or others non-traditional funding round types tracked by Pitchbook. The 49% value is found by comparing the first financing deal date to the last financing deal date, contingent on their being one. To further narrow down this value and more accurately insure that it the values are in fact representative of more traditional seed and series A rounds, I filtered out irrelevant rounds using an excel pivot table based on the given Pitchbook's classifications. I realized that Pitchbook includes rounds that were attempted but never completed or cancelled so I began by removing cancelled or incomplete transactions. Then, the first metric to consider was the last known financing deal type category provided by Pitchbook. A company whose last round was considered an accelerator or incubator round would be filtered out as those rounds would not act as a replacement to a traditional seed or series A, but generally as a supplement. From there, each last deal type category other than Late Stage VC, Early Stage VC, PE/Growth Expansion, M&A, and IPO rounds were hand scraped using Pitchbook and Crunchbase to see if their rounds fit my "traditional subsequent round" requirements. The reason the tags listed above were not hand scraped was because based on the nature of the deal type. In order to reach those type of deals an early stage startup would have needed to reach at least a traditional series A or seed round. Therefore, you can assume that a startup had raised a formal subsequent round of funding if entering one of those categories. For safe measure I took a 2 company random sample from each category, all which resulted in a traditional subsequent round confirmation.

I define a "traditional subsequent round" as a round of funding greater than one year and less than 3 years after their first round of funding (pre-seed or seed) and whose value of their secondary raise is a similar or greater value than their initial round. Generally speaking, a seed or pre-seed round will provide 12-18 months of runway for an early stage business. Therefore a one year minimum range provides a filter of all bridge and add on rounds. The less than three year filter provides a screen for companies who raise money sporadically and opportunistically rather than in sequential traditional rounds. Finally the size criteria of a similar or greater than the initial round requirement is necessary as it provides another layer of filtering of individual angel checks or smaller bridge rounds. Only in select few cases were "series A" rounds smaller than seed rounds. In these cases the round was crossed referenced using Crunchbase which explicitly classified it as a seed or series A round.

After this intensive screening process, I am able to determine that the likelihood of a company raising a subsequent round of financing after an initial equity funding round is roughly 23%. I am careful to say that it is a 23% likelihood for a startup to raise a series A after an equity seed round, although this is likely the finding, simply because Pitchbook does not actively track pre-seed rounds. Many of the rounds classified as "seed rounds" may in fact be pre-seed rounds which would further skew the results. Therefore, the outcome this analysis suggests is that a startup who raises an initial funding round with equity has a 23% likelihood to raise a traditional subsequent round of financing.

This likelihood can be compared to other literature which suggests similar findings. A CB Insights report has found that in over 1100 startup rounds from 2008-2010 48% managed to raise a follow on round of funding—not specific to seed-series A.[42] Sebastian Quintero in the Journal of Empirical Entrepreneurship posted a round by round analysis where he found that a seed to series A round has a 79.4% failure rate or 20.6% success rate in raising a subsequent round of funding[43]. His findings suggest that the seed to series A fundraising period is the most difficult round to raise follow on funding for. Dealroom.co reiterates these findings by analyzing 5 cohorts from 2009-2013 and found an average of 25.8% seed to series A success rate[44]. This value can be compared with roughly 50% success rate for each stage that follows (Series A to B, Series B to C, etc), also suggesting that the seed to series A raise is the least likely transition. Although these

[42] "The Venture Capital Funnel | CBInsights."
[43] "Dissecting Startup Failure Rates by Stage | by Sebastian Quintero | Journal of Empirical Entrepreneurship"
[44] "Only 20-30% of Seeded Companies Go to series-A | DealroomCo"

other sources aren't by definition equity specific, they provide an overview of the difficult fundraising reality that the majority of startups face, especially in the early stages.

This equity baseline value of 23% can be compared to a 43% likelihood to raise a traditional subsequent funding round of funding for startups that raise convertible debt as their first financing round. Initially, the likelihood to raise any additional funding regardless of the type of round was a staggering 73% for startups who raised their initial funding round with convertible debt. Through the same filtering process described in the equity data set analysis, the final value of startups who managed to raise a traditional subsequent round of financing came to 429 companies out of the 990 company data set or 43%.

When trying to understand this sizeable discrepancy, the first form of selection bias I considered was geography. With the hypothesis being that if a data set has a higher density of startups located in the top startup cities such as San Francisco, New York, Boston, Seattle, Palo Alto, Cambridge, etc, then the startup will have an advantage in raising subsequent funding. In 2016, the top five U.S startup cities ranked by amount of VC investment (and a number of other metrics) raised more venture capital funding than the next top 92 cities on the list combined.[45] This is a clear advantage favoring startups headquartered in those locations, and was accounted for in this paper. Figures 13 and 14 below outline the headquarter locations of the startups in the both data sets. The "other" category consists of cities that had nine or less startups listed in the given city. This value filter mainly was for visualization purposes as there were over 365 different cities listed in the equity baseline and nearly 440 listed in the convertible debt data set.

[45] Egan, Dayton, and Carranza, "The Top 100 U.S. Startup Cities in 2016."

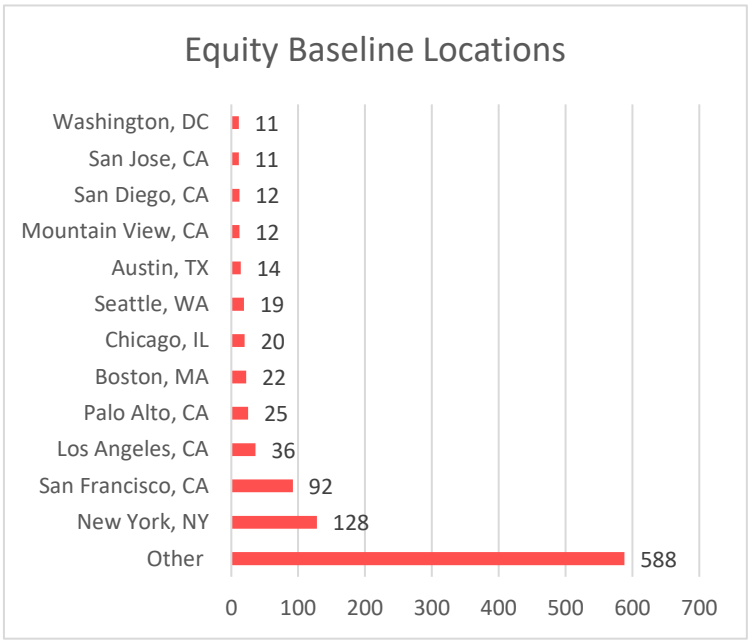

Figure 1310, Equity Locations Breakdown

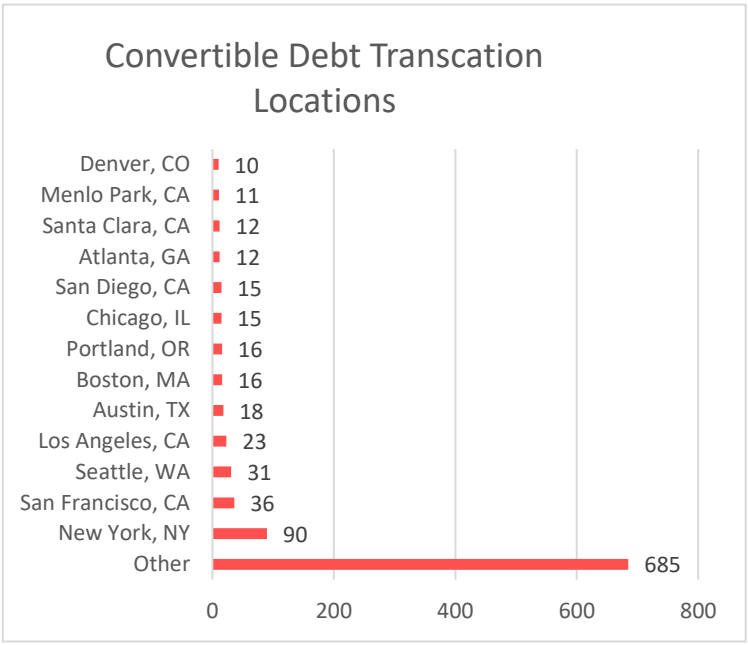

Figure 14, Equity Locations Breakdown

The above clustered bar charts describe the geographic break down of startup HQ locations. What can be seen from the data set is that the equity baseline has a higher total percentage of companies in the top five cities (~30% vs ~20%). Additionally, the convertible debt data set contained 69% of "other" classified cities, a larger percentage compared to the 59% within the equity data set. For the convertible debt group, the combination of a greater "other" location base and a smaller reliance on the top five geographies disproves the hypothesis that the subsequent funding findings were correlated to ease of access to venture capitalists or networks within more dense startup ecosystems. In fact, if analyzed independently these location discoveries would lead one to believe that the equity group would actually have an advantage in raising subsequent funding.

A secondary factor that may influence these results are the impact of accelerators on the companies. It has become common practice for accelerator programs even outside of Y-Combinator and 500Startups to utilize SAFE notes, KISS notes, or some derivative of a convertible note. It is unclear the current breakup of accelerator participation between the data sets, however it is likely skewed towards the convertible debt set. This could ultimately impact the likelihood to raise a subsequent round of funding from a startups initial raise.

The two final explanations to consider based off of this analysis are centered on motivation rather than selection bias. Consider an investor who provided capital in the initial funding round of a startup using a convertible debt instrument. This investor is motivated to push management to raise a priced equity round so their notes will convert and finally act as a store of value. SAFE notes and KISS notes specifically have no technical value until a priced round occurs, as there is no debt component to them, so investors are more inclined to push management to raise, sometimes prematurely. This may be motivation enough for investors to use their capital, networks, and other value add capabilities to encourage founders to raise subsequent priced equity rounds. This is one possible incentive that could provide further explanation as to the 20% discrepancy that favors convertible debt as a precursor to raising subsequent funding.

In regards to the equity baseline, existing equity investors and founders are motivated to protect themselves from dilution. Dilution amounts can be the difference between a successful startup returning a VC's entire fund [46] or being a solid performer. It also plays a role in founder motivation, as too little ownership can discourage founder performance and eventually lead to startup failure. To put the impact of dilution into perspective, the median level of ownership for founders at IPO is just 15%.[47] This value is the product of dilution from multiple financing rounds. An early stage investor generally anticipates four to five [48] rounds of funding and sets up their valuation and ownership stake accordingly. Any additional or unnecessary rounds further dilute their and founder ownership. This ultimately provides a motivation to only raise money when necessary. This incentive to minimize early stage investor and founder dilution, may be a motivation apparent in the equity group, as just 23% went on to raise subsequent funding rounds.

[46] "Returning a VC' entire fund" is a reference to a single startup being so successful that the exit results in a cash position for the VC greater than the entire value of the initial fund.
[47] "The Right Level of Founder Ownership | by Sammy Abdullah."
[48] "VC Method: Adjusting for Multiple Rounds - Equity Share." University of Virginia Darden

Survival and Exit Analysis

The survival and exit analysis will investigate the implications of raising an initial equity round versus an initial convertible debt round on startup outcomes. This analysis is made up of an evaluation of all companies who have 1) become inactive or gone through a closure since their initial financing round and 2) their likelihood to exit. These two outcomes, survival or exit, provide supplementary findings that further help explain the subsequent funding analysis results.

Survival

Closures are notoriously hard to identify in startups given that many startups rarely self-report closures. Pitchbook has actively tracked metrics such as "Out of Business", " Bankruptcy: Liquidation", and Bankruptcy: Admin", however even these metrics do not provide an accurate overview of firms closures. For context if this analysis relied on these metrics we would conclude that 20 of the 998 equity baseline startups have closed. This 2% failure rate, relative to the adage that nine out of ten startups will fail, is not in fact representative of the reality of startup survival. In financial literature it is common to classify a startup as inactive or closed if they have not raised a financing round or had a liquidation event in the past three years. In fact, Crunchbase describes any firm that goes without an "update" for just two years as inactive.[49] For the purpose of this papers research, failure or closure rate will be defined as the number of companies that have not exited or raised a financing round in the past three years divided by the total number of startups in the data set.

With information provided by Pitchbook, I am able to count all companies with a most recent financing date before 2017 and then deduct all successful exits from the data set to find the closure likelihood of the two groups. For the equity baseline there is a survival rate of 46% and therefore a 54% closure rate among startups that have raised an initial equity funding round. This can be compared to a 38% survival rate or 62% closure rate for the convertible debt data set. This data suggests that a startup who raises an initial equity financing round is more likely to survive and avoid closure than one that raises an initial convertible debt round. There are a number of possible explanations for this discrepancy and without surveying each startup individually there is no way to be entirely certain as to the most common reasons for startup closure. Rather than going

[49] Davis, Morse, and Wang, "The Leveraging of Silicon Valley."

into possible explanations here, it will be more helpful to move directly into the findings from the exit analysis and then provide a complete explanation for both results.

Exit

A startup can be classified as a company that has "exited" if it has been merged with a similar size business, acquired by a larger business, or if it has been listed on a public stock exchange. The Pitchbook categories that can be classified as forms of exits include the following: Merger & Acquisition (M&A), Initial Public Offering (IPO), PIPE[50], Merger of Equals, or Buyout/LBO. Each of these events act as a liquidity event for founders and investors alike which ultimately allows them to turn their equity positions into cash.

This papers exit analysis categorizes the total number of companies in each data set with the exit classifications listed above. By using the "Last Known Financing Deal Type" category on Pitcbook, it is possible to identify the total number of each exit type.

Below is the breakdown:

Last Financing Deal Type							
	M&A	IPO	Buyout/LBO	PIPE	Merger of Equals	Total Exits	Total Exits (%)
Equity baseline	11	1	5	5	5	27	2.7%
Convertible Debt	169	5	23	7	2	206	21%

Figure 1511, Exit Analysis based on Last Financing Deal Type

This analysis shows that within the convertible debt group there is nearly a 10x greater likelihood compared to that of the equity baseline that a company will exit. This 21% likelihood to exit is in line with other research that has found a 19%[51] exit likelihood after an initial funding round. Within the equity baseline, there was just a 2.7% likelihood of exit. The only category in which it surpassed convertible debt was a "Merger of Equals."

The findings from each of these metrics, when considered independently seem to imply that there is increased likelihood of certain events based on the type of initial financing methods used. Collectively, the outcomes actually tell quite a different story. To summarize the individual findings:

[50] A PIPE or Private Investment in Public equity is not referencing the company Pipe discussed earlier in the paper, but to any private placement of securities of an already- public company that is made to selected accredited investors.
[51] "Dissecting Startup Failure Rates by Stage | by Sebastian Quintero | Journal of Empirical Entrepreneurship"

1) A greater percentage of the convertible debt data set (43% vs. 23%) was able to secure a subsequent round of funding.

2) The equity baseline has a higher survival likelihood of 46% vs. a 38% survival rate for the convertible debt set.

3) The convertible debt data set has a higher percentage chance to exit of 21% vs. a 2.7% likelihood for the equity baseline.

What these findings suggests collectively is that the convertible debt group is filled with more venture backable businesses. This conclusion can be made as, generally, a venture backed business has binary outcomes that can be one of two things: 1) Exit or 2) failure. Very rarely, does this zero sum game result in a standalone privately held company that exists in perpetuity. This is a function of the very nature of venture capital. Venture capital funds are asset managers for wealthy individuals and institutions who's primary goal is to increase the value of their initial investments. Historically, the main way for Venture Capital funds to return their client's money has been through liquidity events such as mergers, acquisitions, and IPOs which provide funds the opportunity to materialize their gains to then distribute back to their limited partners. For this reason, venture capital investment goes towards companies that have the potential to scale to become billion dollar companies and exit in one way or another. The traditional goal for a VC is for every 10 investments to have one or two companies become successful enough that they can "return the entire fund." A VC will generally seek to return at least 3x in their 10 years fund lifetime. This expected rate of return is a typical "venture rate of return" as it is a value that justifies the risk investors take to be considered a good investment. Seeing as a fund needs to triple the size of its capital under management in order for the limited partners investments to deem their investment worthy, they need to roughly make 12% a year for 10 years. The economics work out such that in a 10 company scenario a VC would rather have one very large winner than 10 small winners. Investors describe this phenomenon as the "Babe Ruth Effect" [52] which essentially prioritizes hitting "home runs" at the cost of striking out more times. The reality of VC investing is investors get a power law distribution versus a normal distribution as a select few companies will have an outsized impact on the entire portfolio while the rest fail. More information on VC economics can be found here.

[52] Epstein, "Frequency versus Magnitude."

Based on this binary strategy, good potential businesses that may be more likely to survive than a typical VC backed startup will not garner venture capital funding if there is no potential for the company to reach to massive scale. A VC is willing to have a higher number of startup failures if it means optimizing for larger exit potential. With that being said the findings that a startup in the equity baseline is more likely to survive, but less likely to exit or raise follow on funding allows us to determine that this equity data set is filled with less venture backable business. The majority of startups that raised an initial equity rounds did not raise follow on funding (77%) yet they still had a higher survival likelihood (46%) than the convertible debt group (38%). This suggests that a greater portion of these startups became sustainable businesses more quickly and did not require the need for additional funding as they were likely already generating cash flow to put back into the business. Many businesses are able to raise a lump sum seed round, start generating revenue quickly, and when profitable, distribute funds back to investors. Not every business needs the help of venture capital, in fact many businesses will be better off avoiding it all together. Those that do raise VC funding are expected to grow to massive scale and prioritize growth over everything. This is not for everyone, in fact it is not for most.

The convertible debt group on the other hand, seemingly expects to be venture backable businesses. By raising a convertible note, investors and startups anticipate subsequent rounds of funding. The expectation is for additional rounds of funding and eventually an exit. This data set confirms that these goals for startups are shared among those who raise initial rounds with convertible debt. The equity data set on the other hand, suggests that a company that raise equity as an initial form of financing may be satisfied with no additional funding rounds and no exits. Although not always the case, as there is a percentage that is motivated by raising subsequent rounds and exiting. A startup that raises equity as an initial round of funding may simply prioritize generating revenue, profitability, and surviving, over raising additional capital and exiting. The final selection bias screen to further confirm these findings will be a breakdown by industry as seen below:

Equity Baseline Industry Break Down		
Industry Type	Number	% of total
Business Products and Services (B2B)	184	18.4%
Consumer Products and Services (B2C)	255	25.6%
Energy	14	1.4%
Financial Services	23	2.3%
Healthcare	92	9.2%
Information Technology	426	42.7%
Materials and Resources	4	0.4%
Total	998	100%

Figure 126, Equity Industry Breakdown

Convertible Debt Industry Break Down		
Industry Type	Number	% of total
Business Products and Services (B2B)	197	20%
Consumer Products and Services (B2C)	230	23%
Energy	18	2%
Financial Services	27	3%
Healthcare	155	16%
Information Technology	352	36%
Materials and Resources	11	1%
Total	990	100%

Figure 137, Convertible Debt Industry Breakdown

In each data set the ordered break down from greatest percentage to least is the following: IT, B2C, B2B, Healthcare, Financial Services, Energy, and Materials and Resources. This parallel popularity of industry sectors confirms that there is not a large industry related selection bias. The largest discrepancy comes in the form of a 6.7% difference in IT companies as a percentage of the total. Within this industry the largest group of companies, which also makes up the largest individual industry group, was software with a 39% share of the equity baseline group and 29% share of the convertible debt group. Based on the findings related to subsequent funding rounds, survival, and exit likelihoods one would think that the convertible debt group would have a greater percentage of software companies given that it has been determined that it is filled with a higher density of venture backed companies. This assumption can be made because software companies generally are the most popular industry group within venture. During 2016, a year where a large percentage of this data set was derived from, Software investment accounted for 36.2% of US VC funding, while biotechnology came second with 17.3%, followed by Media and entertainment rounds with 9.5%.[53] Overall, this industry summary does not bring any new information that would further change our finding as there are many similarities between the two sets of startups. The final two figures (18 and 19) below provide a more detailed breakdown of the industry groups for greater context and comparison.

[53] Hallet, "These Are the Industries Attracting the Most Venture Capital.".

Equity Baseline Industry Break Down		
Industry Groups	Number	% of Total
Business Products and Services (B2B)	**184**	**19%**
Commercial Products	24	2%
Commercial Services	143	14%
Other Business Products and Services	17	2%
Consumer Products and Services (B2C)	**255**	**26%**
Apparel and Accessories	16	2%
Consumer Durables	23	2%
Consumer Non-Durables	19	2%
Media	102	10%
Other Consumer Products and Services	4	0%
Restaurants, Hotels and Leisure	17	2%
Retail	19	2%
Services (Non-Financial)	48	5%
Transportation	7	1%
Energy	**14**	**1%**
Energy Equipment	5	1%
Energy Services	4	0%
Exploration, Production and Refining	3	0%
Other Energy	1	0%
Utilities	1	0%
Financial Services	**23**	**2%**
Capital Markets/Institutions	7	1%
Other Financial Services	16	2%
Healthcare	**92**	**9%**
Healthcare Devices and Supplies	26	3%
Healthcare Services	17	2%
Healthcare Technology Systems	20	2%
Other Healthcare	3	0%
Pharmaceuticals and Biotechnology	26	3%
Information Technology	**426**	**43%**
Communications and Networking	11	1%
Computer Hardware	6	1%
IT Services	24	2%
Other Information Technology	1	0%
Semiconductors	2	0%
Software	382	39%
Materials and Resources	**4**	**0%**
Agriculture	3	0%
Chemicals and Gases	1	0%

Figure 18, Equity Breakdown by Industry Group

Convertible Debt Industry Break Down		
Industry Groups	Number	% of Total
Business Products and Services (B2B)	**197**	**20%**
Commercial Products	26	3%
Commercial Services	118	12%
Commercial Transportation	5	1%
Other Business Products and Services	48	5%
Consumer Products and Services (B2C)	**230**	**23%**
Apparel and Accessories	13	1%
Consumer Durables	33	3%
Consumer Non-Durables	44	4%
Media	67	7%
Other Consumer Products and Services	8	1%
Restaurants, Hotels and Leisure	17	2%
Retail	17	2%
Services (Non-Financial)	27	3%
Transportation	4	0%
Energy	**18**	**2%**
Energy Equipment	3	0%
Energy Services	4	0%
Exploration, Production and Refining	6	1%
Other Energy	4	0%
Financial Services	**27**	**3%**
Capital Markets/Institutions	3	0%
Commercial Banks	4	0%
Insurance	2	0%
Other Financial Services	18	2%
Healthcare	**155**	**16%**
Healthcare Devices and Supplies	44	4%
Healthcare Services	19	2%
Healthcare Technology Systems	33	3%
Other Healthcare	2	0%
Pharmaceuticals and Biotechnology	57	6%
Information Technology	**352**	**36%**
Communications and Networking	28	3%
Computer Hardware	14	1%
IT Services	16	2%
Other Information Technology	2	0%
Semiconductors	5	1%
Software	287	29%
Materials and Resources	**11**	**1%**
Agriculture	1	0%
Chemicals and Gases	5	1%
Metals, Minerals and Mining	4	0%

Figure 149, Convertible Debt Breakdown by Industry Group

Conclusion:

What can be determined from this research is that a company that raises convertible debt as their initial form of financing it is more likely to fit a profile of a venture backable company than a company that raises an initial equity round. The data collected found that a greater percentage of the convertible debt group, 43%, was able to secure a subsequent round of funding compared to those that raised an initial equity round, 23%. It also found that the convertible debt data set had a higher percentage chance to exit of 21% vs. a 2.7% likelihood for the equity baseline, nearly a 10x difference. These two data points would initially lead one to believe that the data set of convertible debt is simply filled with higher quality companies, however when considering survival rate, the last data point tested, a more nuanced conclusion can be drawn. The equity baseline, surprisingly, had a higher survival likelihood of 46% vs. a 38% survival rate for the convertible debt set. Therefore, the majority of startups that raised an initial equity rounds did not raise follow on funding (77%) yet still had a higher survival likelihood (46%) than the convertible debt group.

After conducting geographic, industry, and time based selection bias screens I am able to deduce that a higher percentage of businesses that raised convertible debt prioritized raising additional funding and exiting over survival. This led me to pose the question of what actually defines a quality business? Is it one that survives for a longer time period? Is it one that raises large sums of venture funding? Or one that gets sold to a larger company or IPOs? This question of what defines a "good business" ultimately depends on who you ask. For the early stage VC, the ability to raise subsequent rounds of funding and a company's potential to exit are directly tied to the success of a VC's fund and therefore the types of startups they consider for investment. For the solo entrepreneur creating a sustainable business may be more in line with their personal goals. Neither approach to business building is fundamentally wrong or right, it is simply a byproduct of the incentive structures motivating the relevant parties involved with a given business. This research highlights that companies that raise convertible debt in their initial financing round are more likely to prioritize securing subsequent financing rounds and successfully exiting, where as companies that raise their initial equity rounds are more likely prioritize surviving. In summary, there are many different types of businesses. Some businesses fit a profile in line with what venture capital investors are looking for. Others do not, but may still become self-sufficient and sustainable businesses, likely even more quickly than their VC backed peers.

This paper highlights the innovations in financing early stage businesses over time. Investing in early stage startups has changed dramatically in the last 75 years, all for the benefit of startups. Today, there are more options than ever for startups to raise money. Each option is slightly different and comes with a slew of

advantages and disadvantages. No one instrument is perfect, but these tradeoffs are desperately needed as all startups are different and the financing option that is right for one startup, may not be right for another. It is my hope that this paper provides a holistic view on alternative financing options for early stage startups while also conducting analysis helpful to investors.

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